

MEDCLIN - SCHEDA DOCENTE



Dipartimento di Medicina Clinica e Sperimentale

A) CURRICULUM

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PRESENT POSITION

Dr. Antonino Belfiore is full Professor of Endocrinology at the University of Catania. He is chief of the Unit of Endocrinology at the Hospital Garibaldi-Nesima in Catania and responsible of the associated research laboratory of Endocrinology. He is director of the postgraduate school in Endocrinology and Metabolic Disorders at the University of Catania.

EDUCATION

- 1984-1987: PhD - Endocrinology and Metabolism, University of Naples "Federico II", Naples, Italy
- 1980-1984: Specialist in Nuclear Medicine, University of Padua, Padua, Italy
- 1977-1980: Specialist in Endocrinology and Metabolism, University of Catania, Catania, Italy
- 1971-1977: MD Degree in Medicine and Surgery, University of Catania, Catania, Italy
- 1971: Baccalaureate Classical, High School Nicola Spedalieri, Catania, Italy.

RESEARCH AND PROFESSIONAL EXPERIENCE

- Nov 2017 – Present: Full Professor of Endocrinology, University of Catania, Catania, Italy
- Apr 2006 - Oct 2016: Full Professor of Endocrinology, University Magna Graecia of Catanzaro, Catanzaro, Italy
- Nov 1998 - Apr 2006: Associate Professor of Endocrinology, University Magna Graecia of Catanzaro, Catanzaro, Italy
- Feb 1987 - Oct 1998: Research Assistant in Endocrinology and Metabolism, University of Catania, Catania, Italy
- Jul 1995 - Aug 1995: Research Fellow Cell Biology Laboratory, Diabetes Research, University of California, USA
- Jul 1992 - Aug 1992: Research Fellow, Cell Biology Laboratory, Diabetes Research, University of California, San Francisco, USA
- Jul 1991 - Aug 1991: Research Fellow, Cell Biology Laboratory, Diabetes Research, University of California, San Francisco, USA
- Jul 1989 - Aug 1989: Research Fellow, Cell Biology Laboratory, Diabetes Research, University of California, San Francisco, USA
- Feb 1985 - Feb 1987: Research Fellow in Clinical Immunology, Middlesex Hospital Medical School, London, UK
- Nov 1980 - Feb 1985: Residency in Internal Medicine, University of Catania, Catania, Italy
- Nov 1977 - Oct 1980: Residency in Endocrinology, University of Catania, Catania, Italy
- Nov 1975 - Oct 1977: Internship in Endocrinology, University of Catania, Catania, Italy

TEACHING ACTIVITY

- Nov 2017 – present. University of Catania:
- teaching of Endocrinology, at the Faculty of Medicine and Surgery.
- teaching at the postgraduate school in Endocrinology and Metabolic Disorders.
- teaching at the Degree Course in Dietistic.
- 1998 – 2017. University of Catanzaro:
- Holder of the teaching of Endocrinology, at the Faculty of Medicine and Surgery of Catanzaro.
- Numerous teaching assignments in various medical Specialization Schools.
- Teacher of Endocrinology in various Degree Courses (Infermieristica years 2009-10 – 2011-12); (Tecniche Audiometriche, years 2006-07 – 2008-09); (Infermieristica and Ostetricia; years 2012-13); (Educazione Professionale, Riabilitazione Psichiatrica, Podologia, years 2013-14 - 2015-16).
- Coordinator of the Degree Course in Dietologia e Dietistica, years 2007-2008
- Director of the School of Specialization in Endocrinology and Metabolic Disorders (years 2001-2002 to 2013-2014)
- Coordinator of the aggregate School of Specialization in Endocrinology and Metabolic Disorders at University of Catanzaro, years 2009-2010 to 2016-2017.
- Teacher at the PhD Course in ‘Molecular and Translational Oncology and Innovative Medical-Surgical Technologies’, from 2003-2004 to 2016-2017.
- 1990 – 1998. University of Catania:
- numerous teaching assignments in various medical Specialization Schools and at the School of Dietology and Applied Dietistic.

Tutoring activity

Dr. Belfiore has been the Tutor of:

- 12 PhD students (2009 to date)
- 21 research fellows, most of them with a 3-year fellowship
- He has curated the Thesis of Medical Doctor Degree and the Endocrinologist Diploma of numerous students (more than 20 in the last ten years)

CLINICAL ACTIVITY

- 1978 to 1980, resident, Institute of Medical Pathology, University of Catania.
- 1980 to 1993, staff physician, Endocrine Unit, University of Catania.
- 1993 to 1998, staff physician (dirigente sanitario di I livello), Endocrine Unit, University of Catania.
- January 1999 to February 2000: staff physician (dirigente sanitario di I livello) Endocrine Unit, University Magna Graecia of Catanzaro.
- February 2000 to October 2017: Chief of the Endocrine Unit, University Magna Graecia of Catanzaro.

SCIENTIFIC ACTIVITY

Grants awarded (last ten years)

- ‘Dissecting non-canonical actions of Insulin Receptor Isoforms in breast cancer progression and metabolic reprogramming’, AIRC- Grants IG, 2016-2018 (PI)
- ‘New signaling modalities of insulin and IGF-I receptors and their potential involvement in cancer progression’, AIRC- Grants IG, 2013-2015 (PI)
- ‘The insulin receptor isoform A in cancer: mechanisms of activation and discovery of new substrates’, AIRC- Grants IG, 2010-2012 (PI)

- 'The IGF system in cancer: new players and mediators involving isoform A of the insulin receptor', AIRC- Grants IG, 2007-2009 (PI)
- 'Identificazione di biomarcatori e sviluppo di metodi diagnostici e terapeutici nel campo dell'oncologia e della biologia vascolare' PON 2010-2014 (Programma Operativo Nazionale Ricerca e Competitività 2007-2013), Grant 01-01078 (Responsible of Research Unit)
- 'Emerging mechanisms of resistance to anti-hormone therapy in cancer: new strategies for intervention', AIRC-Regione Calabria Grants e Fondazione Cassa di Risparmio di Calabria e Lucania, 2011-2012 (PI)
- 'Resistenza a terapie oncologiche indotta da espressione aberrante dell'isoforma A del recettore insulinico: studio dei meccanismi molecolari coinvolti e identificazione di nuovi target terapeutici', MIUR - PRIN 2008-2009 (Responsible of Research Unit)

Reviewer of grants for National and International Agencies

- Associazione Italiana per la Ricerca sul Cancro (AIRC), Italy
- The Israel Science Foundation, Israel
- Research Foundation - Flanders (FWO), Belgium
- Institut National Du Cancer, Francia
- Czech Science Foundation, Repubblica Ceca
- United States-Israel Binational Science Foundation, Israel
- Cancer Research, UK
- JDRF and Israel Science Foundation, Israel
- Scientific Council AFM-Plateform Maladies Rares, France
- UCARE (Urology Cancer Research and Education), UK
- Dutch Cancer Society, The Netherlands
- Science Foundation Ireland, Ireland

Organization of Scientific Courses and Congresses (last ten years)

- XII Congresso Associazione Italiana della Tiroide (AIT), 22-24, Catania, November 2018
- Corso di Aggiornamento: Le Manifestazioni Cliniche dei Disturbi 'Subclinici' Tiroidei, Giardini Naxos, 12 May 2017
- IX Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Catanzaro, 24-25 March 2017
- VIII Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, 27-28 Ragusa, January 2016
- VII Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Catanzaro, 8-9 Aprile 2016
- VI Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Palermo, 26-27 Febbraio 2016,
- International Course: Novel mechanisms of signal transduction involved in cancer chemoresistance - Focus on IGF signaling integration and crosstalk. Catanzaro, 6-8 May, 2015
- V Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Catanzaro, 26-27 March, 2015
- Convegno SIAMS Sicilia-Calabria-Molise, L'andrologo: Il medico dell'uomo per tutte le età, Catanzaro, 27-28 March 2015
- IV Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Siracusa, 14-15 November 2014
- III Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Catanzaro, 21-22 February 2014

- Il Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, 29-30 Enna, November 2013
- International Congress 'Obesity, diabetes and cancer. The role of insulin and Insulin-like growth factors', Taormina, October 2013
- I Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Taormina, 14-15 Dicembre 2012
- Corso di Aggiornamento: Patologie Autoimmuni e Neoplastiche della Tiroide: Diagnosi e Terapia, Catanzaro, 17 November 2012
- Corso di Aggiornamento: Ipotiroidismo e Terapie Ormonali Sostitutive, Lamezia Terme, 19 December 2012

Invited Speaker to Scientific Congresses and Seminars (selected)

- *Novel Molecular Partners and Regulators of the Insulin and IGF-I receptor*; International Seminar, Insulin-like signaling and Nutrient signaling, The University of Tokyo, Tokyo, Japan, 24-26 January, 2017.
- *Diabete e cancro: Aspetti molecolari e fisiopatologici*; 26° Congresso Nazionale Società Italiana di Diabetologia (SID), Rimini, 4 May 2016.
- *Challenge nel dosaggio dell'IGF-I*; Congresso Aster: Acromegaly: Science, Teaching, Education and Research', Naples, 4-7 May 2016.
- *Insulino-resistenza e cancro*; Congress: Nutrizione, Obesità e Cancro, University of Padua, 10 October 2015.
- *The IGF-IR - DDR1 crosstalk in cancer*; International Course: Novel mechanisms of signal transduction involved in cancer chemoresistance - Focus on IGF signaling integration and crosstalk., Catanzaro, 6-8 May 2015.
- *IGF and Insulin Signaling in Growth, Metabolism and Disease*; Discussion Leader, IGF & Insulin System in Physiology & Disease, Gordon Research Conference, Ventura, California, USA, 8-13 March 2015.
- *Acromegalia e Complicanze Oncologiche*; III Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria, Catanzaro, 21-22 February, 2014.
- *Aggiornamento flash: TSH reflex*; IV Corso di Aggiornamento Interregionale in Endocrinologia Clinica, Sicilia e Calabria. Siracusa, 14-15 November, 2014.
- *Alle origini dell'insulino-resistenza acquisita: E' tutta colpa degli ormoni*; 37° Congresso Società Italiana di Endocrinologia-XXXI Giornate Endocrinologiche Pisane, Pisa, 10-12 April 2014.
- *Pathways di IGF e cancro*; 2° Congresso Nazionale di Endocrinologia Oncologica, Naples, 11-13 December 2014.
- *Rischio oncologico da radioiodio*; 7° Congresso AIT – XXXI Giornate Italiane della Tiroide, 5-7 December 2013, Roma
- *Insulin receptor isoforms and insulin receptor/insulin-like growth factor receptor hybrids in physiology and disease*; 4° International Workshop on Insulin and Cancer, x San Paolo, Brasil, 11-13 December 2014.
- *Insulin and Insulin Receptor in Cancer: Problems and New Opportunities*; International Open Workshop, Emerging Paradigms of Insulin-Like Activities in Physiology & Disease: 'From Pathophysiology to Targeted Therapy', Karolinska Institute, Stockholm, Sweden, 12 –16 August 2013.
- *Il processo multi-step della carcinogenesi*; 36° Congresso della Società Italiana di Endocrinologia, Padua, 5-8 June 2013.
- *The Role of Insulin Receptor in Cancer*; 15th International Congress of Endocrinology, Firenze, 5-9 May 2012.
- *Insulin and insulin receptor in cancer: problems and new opportunities*; 54° Annual Meeting of the Italian Cancer Society, Bologna, 1-4 October 2012.

- *Endocrine Disruptors*; Corso di aggiornamento permanente in endocrinologia, diabetologia e metabolismo, Palermo, 20-22 April 2012.
- *L'insulina come fattore di proliferazione*; I Congresso Nazionale di Endocrinologia Oncologica, Rome, 26-28 October, 2011.
- *Obesità e Cancro*: aspetti biologici; III Giornate Interregionali SIO, Settembre, 2011, Torino
- *IGF-I e Cancro*; 35° Congresso della Società Italiana di Endocrinologia, Pescara/Chieti, May 2011.
- *Novel Mechanisms of IGF-IR Upregulation in Cancer*; Gordon Research Conference, Insulin-Like Growth Factors in Physiology & Disease, February 27 - March 4, 2011, Ventura, CA, USA
- *Azioni non-genomiche degli steroidi sessuali nel cancro prostatico*; IX Congresso della Società di Andrologia e Medicina della Sessualità, 4-6 Novembre 2010, Modena
- *IGF-I e Cancro*; 23° Congresso della Società Italiana di Diabetologia, 10-12 June 2010, Padova
- *Insulina, IGFs e recettori tirosino-chinasici in oncologia*; 33° Congresso Nazionale SIE, May 2009 - Sorrento
- *Insulina, IGF-I e Cancerogenesi*; I Workshop di Endocrinologia Oncologica: Innovazioni in tema di terapia, 30-31 October, 2009, Udine
- *Inquadramento e Follow-up del Carcinoma Differenziato della Tiroide*; Incontri di Aggiornamento Clinico in Endocrinologia, Metabolismo e Nutrizione, Novembre 2015, University of Bari, Bari
- *Insulin and Insulin Receptor in Cancer: Problems and New Opportunities*; Erasmus Universiteit, May, 2013, Rotterdam, The Netherlands
- *Il ruolo dell'insulina e dei fattori insulino-simili nella crescita neoplastica*; University of Pisa, 6 March 2013, Pisa
- *Ruolo dell'Insulina e dei Fattori Insulino-simili nella crescita neoplastica*; University of Ferrara, 23 October 2014, Ferrara
- *Insulina, analoghi e carcinogenesi*; Master in 'Metodologie di Ricerca Bio-Medica in Diabetologia', University of Bari, 27-28 February 2012, Bari
- *Insulin Receptor Isoforms in Physiology and Disease: New players in cancer and cancer therapy*; 10 June 2009 - Medimmune, Gaithersburg, USA

B) ATTIVITA' DI RICERCA

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Dr. Belfiore has long-standing research interests in the study of thyroid disorders, and in the molecular, biological and translational aspects of human endocrine related cancers, namely cancers of the breast, prostate and thyroid. In the last twenty years his research interests have been mostly focused on studies concerning the biological significance of dysregulation of the Insulin/IGF axis in human cancer, with particular focus on the role of insulin and IGF2. In this area major contributions have regarded the finding that the Insulin Receptor (IR) is overexpressed and has a key role in most malignancies. In particular, IR isoform A, IR-A, has been found to be a high affinity ligand for IGF2 and to represent the 'oncofetal' IR isoform. In cancer, IR-A contributes to increased cell proliferation, dedifferentiation and stem-like phenotype and resistance to targeted and conventional therapies. These findings contribute to explain the increased risk of cancer occurrence and progression in obese and diabetic patients, who have elevated levels of circulating insulin.

More information on dr. Belfiore's contribution in this field can be found in:

- Belfiore et al: Insulin receptor isoforms and insulin receptor/insulin-like growth factor receptor hybrids in physiology and disease. *Endocr Rev.* 2009 Oct;30(6):586-623. doi: 10.1210/er.2008-0047; Belfiore et al: Insulin Receptor Isoforms in Physiology and Disease: An Updated View. *Endocr Rev.* 38(5):379-431. doi: 10.1210/er.2017-00073.

- Overall, his scientific accomplishments are summarized by the following parameters: Publications, n=200, Citations=14,385, H-index=62 (Sept 2019) (<https://scholar.google.com/citations?hl=en&user=7ooWEqkAAAAJ>).

Parole chiave

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Insulin receptor, insulin receptor isoforms, insulin action, insulin resistance, IGF system, endocrine related cancers, thyroid disorders, thyroid nodules, thyroid cytology, thyroid tumors

C) ALTRE ATTIVITÀ

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Editor-in-chief: *Frontiers Endocrinology, Cancer, (Lausanne) (ISSN: 1664-2392)*, 2013 - present

Associate Editor: *BMC Cancer*, 2014 - present

Member of the Technical Scientific Committee of the Italian Association for Cancer Research (AIRC) (2017 – present)

Tutor of PhD students